

REMARKS

Claims 1, 2, 9-11, 14-17, and 20-21 are currently pending. Claims 1, 2, 9-11, and 14-17 are being amended. Claim 3-8, 12, 13, 18, and 19 have been cancelled. Applicant reserves the right to pursue the original claims and other claims in this and other applications.

Claims 1-3, 5-7, 11-13, and 16-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabata (US 6,088,006) in view of Tatsuzawa (US 6,441,844), and further in view of Aritake et al. (US 5,872,590). This rejection is respectfully traversed. In order to establish a *prima facie* case of obviousness "the prior art reference (or references when combined) must teach or suggest all the claim limitations." M.P.E.P. §2142. None of Tabata, Tatsuzawa, and Aritake et al., even when considered in combination, teach or suggest all limitations of independent claims 1, 5, 11, or 16.

Claim 1 recites, *inter alia*, a method for displaying stereoscopic images, comprising the steps of: "converting object data of objects, made of polygons having 3D coordinates, to be viewed in a planar view to reference camera coordinate system data with its origin at a reference camera and converting object data of objects, made of polygons having 3D coordinates, to be viewed in a stereoscopic view to parallax camera coordinate system data for right and left eyes respectively with their origins at parallax cameras for right and left eyes having predetermined parallax angles; drawing the reference camera coordinate system data and the parallax camera coordinate system data for right eye as image data for right eye in a video memory; drawing the reference camera coordinate system data and the parallax camera coordinate system for left eye as image data for left eye in the video memory; and synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images mixing stereoscopic and planar objects."

Tabata does not teach or suggest these limitations. To the contrary, Tabata indicates the purpose of its invention as generating a stereoscopic image which can be easily observed by an observer. In Tabata, two-dimensional image data generated respectively from right and left eye view points are shifted in horizontal direction, so that a difference between horizontal displacement amounts from the centers of the two-dimensional image data is set constant. Tabata teaches "stereoscopic image generating apparatus of this embodiment generates left and right images (pictures) and then shifts them." Col. 9, ln. 58-60. Specifically, Tabata indicates shifting for two-dimensional image is performed after a rendering process.

On the other hand, in the present invention, no shifting process is performed for images after a rendering process, and camera coordinate systems are changed for each object during the process of geometry conversion, which is performed before a rendering process, so that it becomes possible to display images mixing stereoscopic view object and planar view objects.

Applicant respectfully submits that Tabata fails to teach or suggest "synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images mixing stereoscopic and planar objects." (emphasis added) Tatsuzawa and Aritake et al. likewise fail to disclose or suggest this limitation.

Tatsuzawa discloses a video data generating system, in which video data for a stereoscopic view can be generated with low cost. In the system of Tatsuzawa, a front camera, used as reference camera, and right and left simple view cameras are applied on a video signal output from the front camera to generate video signals for stereoscopic view. The system of Tatsuzawa is to be used to display a stereoscopic view of a real space. Tatsuzawa teaches how images data is obtained, but fails to teach

or suggest any system or method in which image data are displayed mixing stereoscopic and planar objects as in the claimed invention.

Furthermore, Aritake et al. teaches a system in which one or more viewers can observe a stereoscopic image as moving, without any supplemental glasses, and viewers other than those observing the stereoscopic image can observe a clear two-dimensional image. Stereoscopic images or two-dimensional images can be observed by viewer, depending on the viewer's position. Aritake et al. fails to teach or suggest a method of generating and displaying images mixing a stereoscopic view object and a planar view object as recited in claims 1, 5, 11, and 16. Aritake et al. uses similar terminologies such as stereoscopic image and two-dimensional image, but their meanings are different from those in the present invention, because of the differences between stereoscopic and planar objects as used in the present invention, and stereoscopic and two-dimensional images as used in Aritake et al. Thus, Tatsuzawa and Aritake et al. do not remedy the deficiencies of Tabata with respect to "synthesizing the image data for right and left eyes drawn in the video memory and displaying, on a stereoscopic display device, images mixing stereoscopic and planar objects" of the claimed invention. (Emphasis added)

In addition, the Office Action asserts that Tabata fails to teach that the conversion of object data to be displayed in a planar view to reference camera coordinate system with its origin at a reference camera, and states that Tatsuzawa teaches the conversion of object data to reference coordinate system data to be displayed in a planar view with its origin at a reference camera. However, Tatsuzawa teaches that "the restored front view signal is used when a two-dimensional image is projected. That is, it is supplied to an ordinary monitor... When it is desired to project the solid picture, the left and right video signals SL and SR are supplied to a CRT monitor

(stereoscopic monitor).” Col. 9, 21-26 (emphasis added). This clearly indicates that in Tatsuzawa, image data, which mixes stereoscopic and planar view images, are not displayed on a display.

The Office Action has admitted that Tabata and Tatsuzawa fail to teach that the parallax angles for the left and right eyes are predetermined, and asserts that Aritake et al. teach in Col. 10, ln. 62-64 that the horizontal distance between the parallax cameras that contain equivalent angles of parallax is predetermined. However, Applicant respectfully submits that this is incorrect. In Aritake et al., CCD cameras 42, 44 are provided with a predetermined horizontal distance, to detect the position of an observer. On the other hand, in the claimed invention, parallax cameras having parallax angles are provided to generate image data for use in displaying stereoscopic and planar images on a display.

Moreover, MPEP §2143 delineates the three criteria for establishing a prima facie case of obviousness as: 1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; 2) there must be a reasonable expectation of success; and 3) the prior art reference (or references when combined) must teach or suggest all the claim limitations. The Office Action has failed to make a prima facie case of obviousness under this MPEP provision. None of the cited references contain a suggestion or a motivation for their combination. None of the references sets forth a reasonable expectation of success in their combination. The Office Action does not identify where a suggestion to combine the references exists or why a reasonable expectation of success of combining the references exists. Rather, information contained in the current application is impermissibly used, in hindsight, to pick and choose features of the references to combine to arrive at the present invention.

Furthermore, Tabata, Tatsuzawa, and Aritake et al. are not combinable. Aritake et al. teaches that “[w]hen the observer position information is supplied ..., the observing positions are used as observing point positions and it is calculated how the polygons which form the target object and have been stored in the modeling data storing unit 62 are seen from the observing point positions. That is, the position, size, color, texture, and the like are calculated and are developed as right-eye image data ... with respect to the right-eye image and are developed as left-eye image data ... with respect to the left-eye image.” Col. 9, ln. 60-64 (emphasis added). Tabata teaches “stereoscopic image generating apparatus of this embodiment generates left and right images (pictures) and then shifts them.” Col. 9, ln. 58-60. No calculation is done on size, color, or texture in Tabata. Tatsuzawa teaches that “left and right video signals SL and SR having image sizes shown ... are obtained from the left and right video cameras 18L and 18R.” Col. 5, ln. 5-7. All three references have very different and non-combinable methods of obtaining stereoscopic image data.

Since Tabata, Tatsuzawa, and Aritake et al. do not teach or suggest all of the limitations of claim 1, this claim is not rendered obvious over the cited references.

Claims 2 and 3 depend from claim 1 and are allowable for at least the reasons noted above with respect to claim 1.

Claims 5, 11, and 16 have a similar claim limitation as claim 1 and are allowable for at least the reason noted above with respect to claim 1.

Claims 6 and 7; 12 and 13; and 17 and 18 depend from claim 5, 11, and 16, respectively, and are allowable for at least the reasons noted above with respect to claims 5, 11, and 16.

Claims 4, 8, and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabata in view of Aritake et al. The claims were previously canceled and therefore is unclear why this rejection is being maintained.

Claims 9-10, 14-15, and 20-21 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tabata in view of Tatsuzawa, and further in view of Aritake et al., and further in view of Hoglin (US 5,949,477). This rejection is respectfully traversed. Claims 9-10 depend from claim 1 and are patentable at least for the reasons mentioned above. Claims 14-15 depend from claim 11 and are patentable at least for the reasons mentioned above. Claims 20-21 depend from claim 16 and are patentable at least for the reasons mentioned above.

Moreover, there is no motivation to combine these four reference together to attain the subject matter of these claims. Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 9-10, 14-15, and 20-21 be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Dated: September 18, 2006

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